EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

MATHEMATICS **6880/02**

Paper 2 Structured Questions (Core) **October/November 2023**

2 hours

Candidates answer on the Question Paper.

Additional Materials: Scientific calculator
Geometrical Instruments
Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces provided.
Write in dark blue or black pen in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams or graphs.
Do **not** use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

All working should be clearly shown below that question.
The number of marks is given in brackets [ ] at the end of each question **or** part question.

Scientific calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures.
Give answers in degrees to one decimal place.

For π, use either your calculator value or 3.142.
The total of the marks for this paper is 90.

For Examiner's Use	
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Total	

This document consists of **13** printed pages and **3** blank pages.

1 **(a)** Work out $\frac{(3.33 - 2.22)^2 + 1.11}{3.33 - 2.22 \times 1.11}$.

Write your full calculator display.

Answer (a) ..... [2]

(b) Write your answer to part **(a)** correct to three significant figures.

Answer (b) ..... [1]

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2 Simplify

$x^2 \div y^{-3}$

Answer ..... [2]

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3 Find the 7th term in each of the following sequences.

1	2	3	4	...	7
3	2	1	0	...	*a*
4	9	16	25	...	*b*
7	11	17	25	...	*c*

Answer a = ...

b = ...

c = ... [4]

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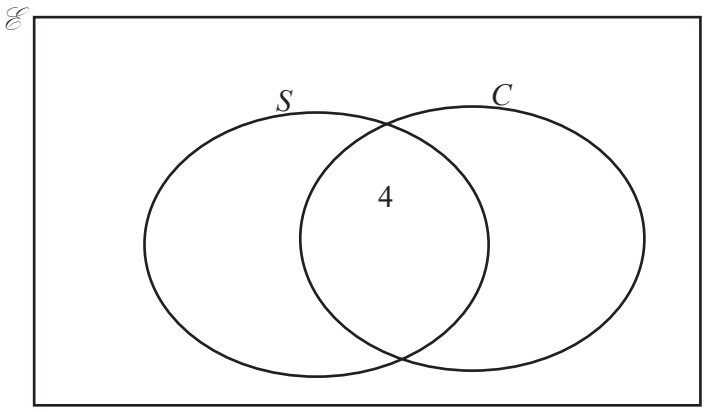
4 A group of 30 people were asked which sport out of cricket and soccer they liked.

16 of them liked soccer.

3 did not like any sport.

15 liked cricket.

(a) Complete the Venn diagram to illustrate this information.



[3]

(b) state the number of people who liked exactly one of the two sports.

Answer (b) ..... [2]

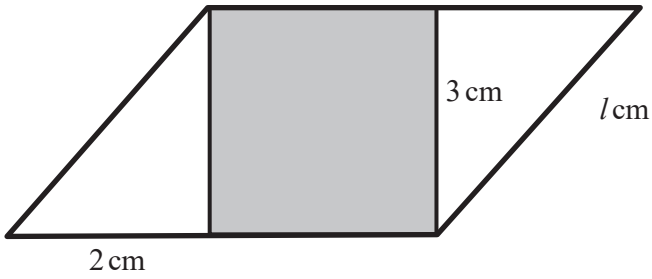
(c) Find $n(S' \cup C')$

Answer (c) ..... [2]

(d) Use set symbols to describe the set of people who liked at least one of the two sports.

Answer (d) ..... [2]

5 The diagram shows a parallelogram and a shaded square.



(a) Find the area of the unshaded part of the parallelogram.

Answer (a) ..... cm^2 [3]

(b) Calculate the value of l.

Answer (b) l = ... [3]

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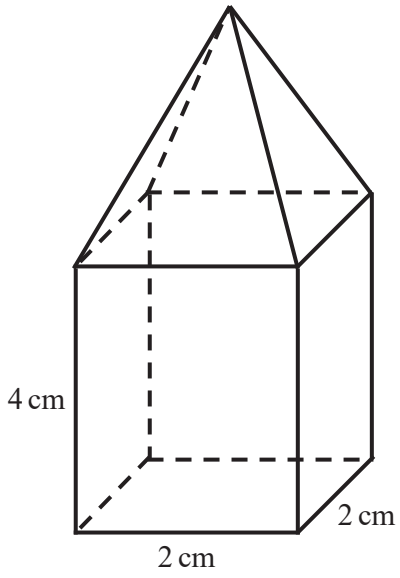
6 The diagram shows a box made up of two solids.



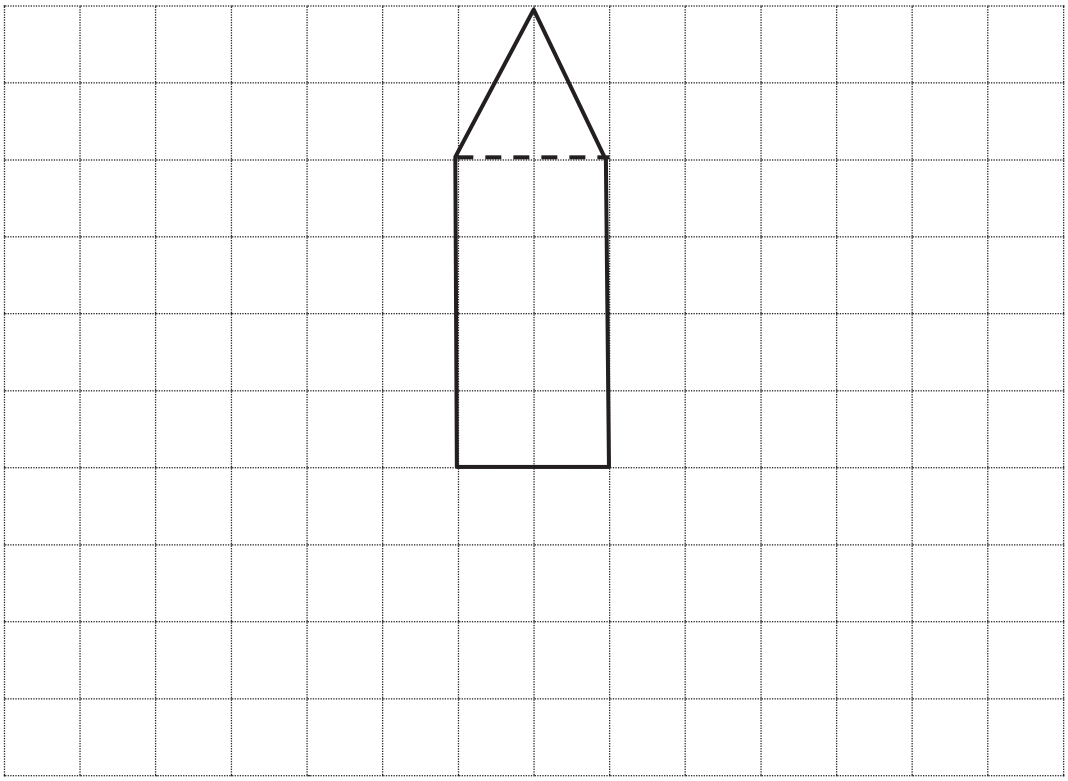
(a) Write down the name of the solid that forms the top part of the box.

Answer (a) ..... [1]

(b) The perpendicular height of each triangular face is 2 cm.

Complete an accurate net of the box on the grid below.

Part of the net has been drawn for you.

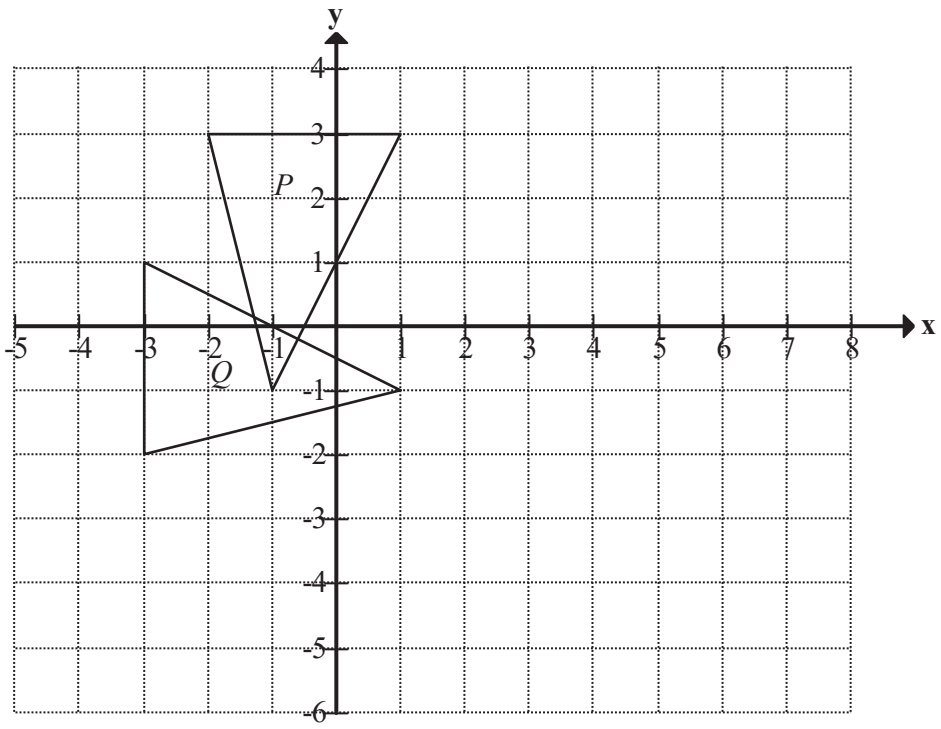


[3]

(c) Calculate the total surface area of the box.

Answer (c) ..... cm^2 [2]

7 You are given triangles P and Q in the grid below.



(a) Describe a single transformation that maps triangle P onto triangle Q.

.....

..... [3]

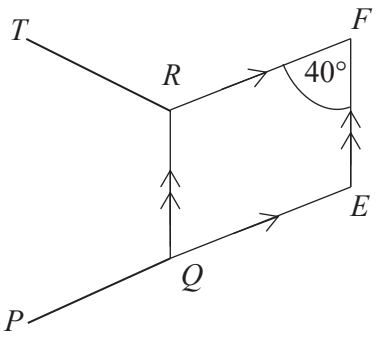
(b) Reflect triangle P in $x = 3$.

Label the image R. [2]

(c) Translate triangle P by vector $\begin{pmatrix} 3 \\ -5 \end{pmatrix}$

Label the image S. [2]

8



NOT TO SCALE

In the diagram *PQRT* is part of a regular hexagon.

QEFR is a parallelogram.

Angle *EFR* = 40°.

Calculate

(a) angle *QRF*,

Answer (a) .....° [2]

(b) the size of each interior angle of the regular hexagon,

Answer (b) .....° [2]

(c) angle *TRF*.

Answer (c) .....° [2]

[Turn over

9 The table shows travelling times for four buses moving from Bhunya to Manzini.

	Bus **A**	Bus **B**	Bus **C**	Bus **D**
Leaves Bhunya	0830	0855	0915	0925
Passes Luyengo	0856	0921	0941	0951
Passes Malkerns	0902	0931	0951	1001
Arrives in Manzini	0936	1001	1021	1031

Lunga leaves home at 0850.

He takes 20 minutes to walk to the bus station at Bhunya.

(a) Find the time when he reaches the bus station.

Answer (a) ..... [1]

(b) State the earliest bus he would catch to Manzini.

Answer (b) Bus ..... [1]

(c) Calculate the total time taken by bus **A** to travel from Bhunya to Manzini.

Give your answer in hours and minutes.

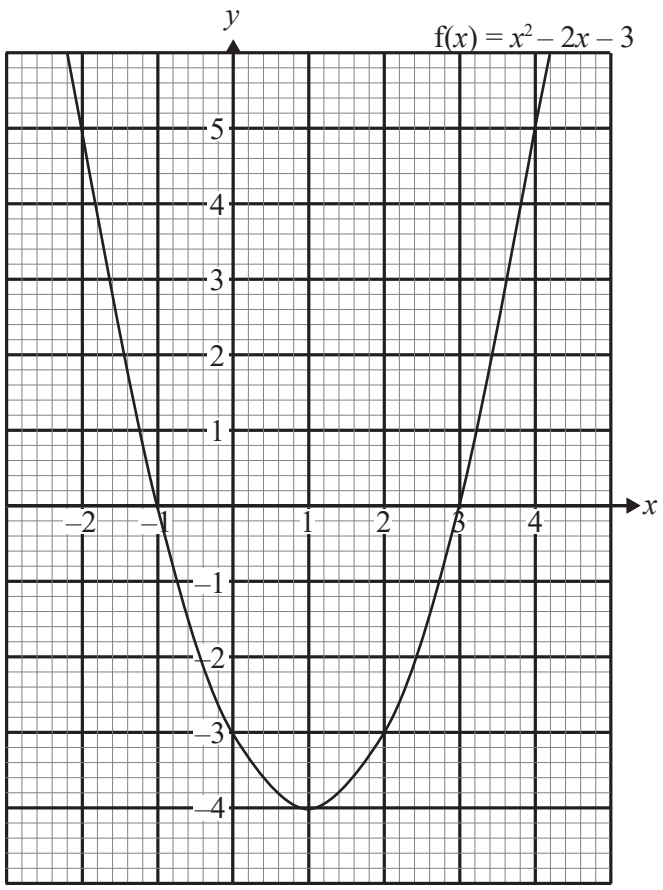
Answer (c) ..... [1]

(d) The average speed of bus **A** between Malkerns and Manzini is 50 km/h.

Calculate the distance travelled by the bus between Malkerns and Manzini.

Answer (d) ..... km [3]

10 The graph of $y = f(x)$ is drawn.



(a) Use the graph to complete the table of values for the function $y = f(x)$.

x	–2	–1.5	–1	0	1	2	3	3.5	4
$y = f(x)$	5		0	–3	–4	–3	0		5

[2]

(b) (i) Write down the equation of the line of symmetry of the graph.

Answer (b) ..... [1]

(ii) Find the values of x for which $f(x) = 1.5$.

Answer (b)(ii) x = ... or x = ... [2]

(iii) Write down the coordinates of the lowest point of the graph.

Answer (b)(iii) (..... , ...) [1]

[Turn over

(c) **(i)** Complete the table of values for the equation $y = -\frac{3}{2}x$. [1]

x	–2	0	3
y	3		

(ii) On the grid, draw the line $y = -\frac{3}{2}x$ [1]

(iii) Write down the coordinates of the two points where the line $y = -\frac{3}{2}x$ crosses the graph $y = f(x)$.

Answer (c)(iii) (..... , ...) and (..... , ...) [2]

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11 Three farmers bought goats at an agriculture auction.

Mr Dlamini bought x goats.

Mr Matse bought 4 times as many goats as Mr Dlamini.

Mr Nkambule bought 3 more goats than Mr Matse.

(a) Write down an expression in terms of x for

(i) the number of goats Mr Matse bought,

Answer (a)(i) ..... [1]

(ii) the number of goats Mr Nkambule bought.

Answer (a)(ii) ..... [1]

(b) Altogether the three farmers bought 120 goats.

Form an equation and find the number of goats Mr Matse and Mr Nkambule each bought.

Answer (b) Mr Matse ..... goats, Mr Nkambule ..... goats [4]

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12 Mrs Zwane bought 2 cases of juice and 3 cases of spring water, all for E504.

Mrs Shongwe bought 3 cases of the same juice and 4 cases of spring water, all for E708.

Let x be the cost of 1 case of juice and y be the cost of 1 case of spring water.

(a) Form equations in x and y for each woman's purchases.

Answer Mrs Zwane ..... [1]

Mrs Shongwe ..... [1]

(b) Solve the equations to find the cost of 1 case of juice and the cost of 1 case of water

Answer (b) x = ... y = ... [4]

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13 Solve for a, b and c.

$$2\begin{pmatrix} a & -2 \\ 1 & a \end{pmatrix} + \begin{pmatrix} 7 & -3 \\ b & b \end{pmatrix} = \begin{pmatrix} 27 & -7 \\ 18 & c \end{pmatrix}$$

Answer a = ... b = ... c = ... [3]

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14 **(a)** A group of 20 music lovers were asked which music genre they liked between choral and rock music.

All who liked rock also liked choral.

17 liked choral.

10 liked rock.

A music lover was chosen at random.

Find the probability that the music lover

(i) liked both genres,

Answer (a)(i) ..... [1]

(ii) liked exactly one of the two genres,

Answer (a)(ii) ..... [2]

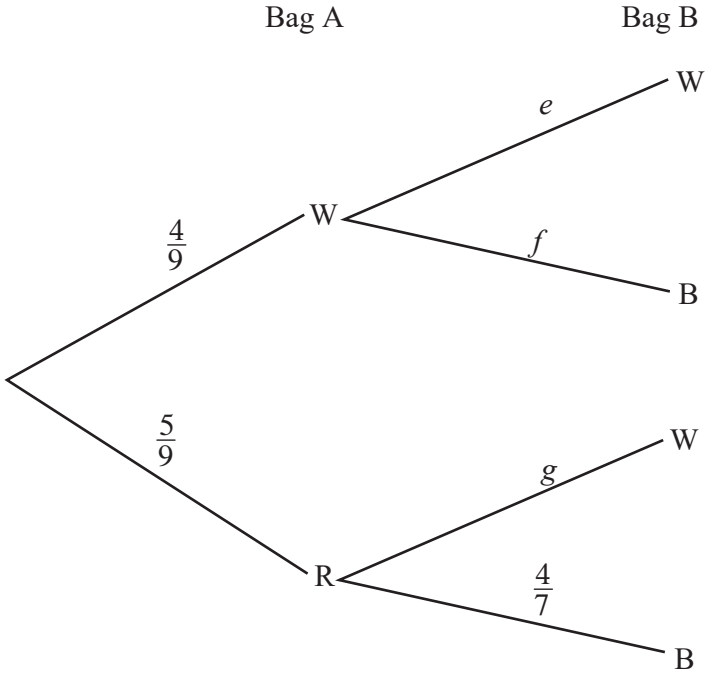
(iii) did not like any of the two genres.

Answer (a)(iii) ..... [1]

(b) Bag A has 4 white balls and 5 red balls.

Bag B has 3 white balls and 4 blue balls.

A ball is picked from each bag at random.



(i) State the values of e, f and g.

Answer (b)(i) e = ..., f = ..., g = ... [2]

(ii) Find the probability that both balls are of the same colour.

Answer (b)(ii) ..... [1]

(iii) Find the probability that at least one ball is white.

Answer (b)(iii) ..... [2]

(iv) State the probability that one ball is red.

Answer (b)(iv) ..... [1]

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15 In the following distribution the numbers are arranged in ascending order.

8 10 p q 17 18 r 23

The mean, mode and median of the distribution are stated.

Mean = 15

Mode = 10

Median = 16

Find the values of p, q and r.

Answer p = ..., q = ..., r = ... [4]

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